Diagnosis and Management of Testicular Cancer

The European Point of View

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Part I

Overview of the Latest Recommendations of the European Germ Cell Cancer Group

Latest Recommendations of the European Germ Cell Cancer Group on Diagnosis and Treatment of Germ Cell Cancer

1

Susanne Krege

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1.1 Diagnosis

The majority of germ cell tumours present in the testis as a painless swollen mass. Mandatory diagnostic examinations of a suspicious testis include palpation, ultrasonography with a >7.5-MHz transducer and determination of the tumour markers alpha-fetoprotein (AFP), human choriongonadotropin (hCG) and lactic dehydrogenase (LDH). The diagnosis is confirmed by surgical exploration of the testis using an inguinal incision. Only in case of life-threatening metastatic disease and unequivocal diagnosis, surgery of the testis should be postponed until completion of chemotherapy.

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In a minority germ cell cancer presents as a primary extragonadal cancer, preferably in the retroperitoneum or mediastinum. Back pain can be the first symptom. Diagnosis is confirmed by elevated tumour markers or biopsy of the mass.

1.2 Treatment of the Primary Tumour

Standard treatment of the tumour-bearing testicle is orchiectomy along with the resection of the spermatic cord at the level of the internal inguinal ring. Some testis tumours might be benign. Therefore, in case of negative tumour markers and a small testicular lesion a frozen section should be performed to allow organ-preserving surgery in case of a benign histology [5]. Organ-preserving surgery in case of testicular cancer can be performed in patients with synchronous bilateral tumours, a metachronous contralateral tumour or a solitary testicle with normal preoperative testosterone level [6]. A testicular intraepithelial neoplasia (TIN) which is regularly found around the tumour is managed by local radiation with 20 Gy, but may be delayed in patients who wish to father children.

1.3 Contralateral TIN

Nine per cent of patients with germ cell cancer of the testis harbour TIN within the contralateral testicle. Especially patients younger than 40 years and with a testicular volume <12 ml are at risk. To detect TIN contralateral biopsies at two sides, preferably at the time of resection of the tumour-bearing testicle, can be performed [7]. The biopsies should be preserved in Bouin's solution, not formalin. TIN can be managed by orchiectomy or local radiotherapy with 20 Gy as definitive treatment options or surveillance in case of patients who still want to father children [8]. Patients who need chemotherapy for their definitive cancer have a chance of about 66 % that TIN will be eradicated by chemotherapy. Another biopsy to confirm this should not be performed earlier than 2 years after completion of chemotherapy [9].

1.4 Staging

Table 1.1 gives an overview about mandatory information of the histopathological report.
Table 1.2 shows the different types of germ cell tumours according to the WHO classification.

Table 1.1 Requests concerning the histopathological report

Localization of the tumour
Size
Multiplicity
Extension of the tumour (pT category according to UICC)
Histopathological type (WHO)
In seminoma: presence of syncytiotrophoblasts
In spermatocytic seminoma: any sarcomatous elements
In pluriform tumours: description and percentage of each individual component
Presence of TIN
Immunohistochemistry: AFP and hCG for detection of yolk sac tumour and choriocarcinoma CD31/FVIII for vascular invasion (pluripotency-related markers such as OCT4, NANOG, LIN28, AP-2 gamma for TIN, seminoma, embryonal cell carcinoma)

The clinical stage is defined by the UICC TNM classification (Table 1.3). Patients with metastatic disease are classified according to the classification of the

Table 1.2 WHO classification of germ-cell tumours of the testis [10]

Histological type	ICD-O-M
Intratubular germ cell neoplasia, unclassified	9064/2
Others	
Tumours of one histological type (pure forms)	
Seminoma	9061/3
(Subtype) Seminoma with syncytiotrophoblastic cells	
Spermatocytic seminoma	9063/3
(Subtype) Spermatocytic seminoma with sarcoma	
Embryonal carcinoma	9070/3
Yolk sac tumour	9071/3
Trophoblastic tumours	
Choriocarcinoma	9100/3
Trophoblastic neoplasms other than choriocarcinoma	
Monophasic choriocarcinoma	
Placental site trophoblastic tumour	9104/1
Teratoma	9080/3
Dermoid cyst	9084/0
Monodermal teratoma	
Teratoma with somatic type malignancies	9084/3
Tumours of more than one histological type (mixed forms)	
Mixed embryonal carcinoma and teratoma	9081/3
Mixed teratoma and seminoma	9085/3
Choriocarcinoma and teratoma/embryonal carcinoma	9101/3
Others	

WHO World Health Organization

International Germ Cell Cancer Collaborative Group (IGCCCG), which also pays regard to the elevation of tumour markers (Table 1.4).

Spiral computerized tomography (CT) scans of the thorax, abdomen and pelvis remain the staging procedures of choice. Magnetic resonance tomography (MRT)

Table 1.3 TNM classification – UICC 2009 [11]

pT	Primary tumour
pTX	Primary tumour cannot be assessed
pT0	No evidence of primary tumour (e.g. histological scar in testis)
pTis	Intratubular germ cell neoplasia (carcinoma in situ)
pT1	Tumour limited to testis and epididymis without vascular/lymphatic invasion: tumour may invade tunica albuginea but not tunica vaginalis
pT2	Tumour limited to testis and epididymis with vascular/lymphatic invasion, or tumour extending through tunica albuginea with involvement of tunica vaginalis
pT3	Tumour invades spermatic cord with or without vascular/lymphatic invasion
pT4	Tumour invades scrotum with or without vascular/lymphatic invasion
N	Regional lymph nodes clinical
NX	Regional lymph nodes cannot be assessed
N0	No regional lymph node metastasis
N1	Metastasis with a lymph node mass 2 cm or less in greatest dimension or multiple lymph nodes, none more than 2 cm in greatest dimension
N2	Metastasis with a lymph node mass more than 2 cm but not more than 5 cm in greatest dimension, or multiple lymph nodes, any one mass more than 2 cm but not more than 5 cm in greatest dimension
N3	Metastasis with a lymph node mass more than 5 cm in greatest dimension
pN	Pathological
pNX	Regional lymph nodes cannot be assessed
pN0	No regional lymph node metastasis
pN1	Metastasis with a lymph node mass 2 cm or less in greatest dimension and 5 or fewer positive nodes, none more than 2 cm in greatest dimension
pN2	Metastasis with a lymph node mass more than 2 cm but not more than 5 cm in greatest dimension; or more than 5 nodes positive, none more than 5 cm; or evidence or extranodal extension of tumour
pN3	Metastasis with a lymph node mass more than 5 cm in greatest dimension
M	Distant metastasis
MX	Distant metastasis cannot be assessed
M0	No distant metastasis
M1	Distant metastasis